

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of claims:**

Claims 1-7 (canceled)

Claim 8 (new):        A stimuli-responsive polymer hydrogel comprising:  
a water-insoluble polymer as a phase separation structure;

wherein the polymer hydrogel is capable of gelating as a result of absorbing and swelling with water and capable of changing its degree of swelling and/or volume in response to a stimulus.

Claim 9 (new):        The stimuli-responsive polymer hydrogel according to Claim 1, wherein the water-insoluble polymer is a polymer without a cross-linking point.

Claim 10 (new):       The stimuli-responsive polymer hydrogel according to Claim 1, wherein the water-insoluble polymer has a glass transition temperature lower than a working temperature of the stimuli-responsive polymer hydrogel, and wherein the water-insoluble polymer has a rubbery characteristic at the working temperature.

Claim 11 (new):       The stimuli-responsive polymer hydrogel according to Claim 1, wherein the stimulus is a change in pH, and wherein the stimuli-responsive polymer hydrogel changes volume in response to the pH change.

Claim 12 (new): A method for producing a stimuli-responsive polymer hydrogel, comprising:

polymerizing a monomer having a stimuli-responsive functional group with a crosslinker in a solution of a water-insoluble polymer in an organic solvent to yield an organogel comprising the water-insoluble polymer and a stimuli-responsive polymer;

subjecting the organogel to a treatment to remove the organic solvent to thereby yield a dried gel, the treatment selected from the group consisting of: drying under reduced pressure; drying by heating; and drying by heating under reduced pressure; and

allowing the dried gel to swell with water to thereby yield a hydrogel.

Claim 13 (new): A method for producing a stimuli-responsive hydrogel, comprising:

carrying out the polymerization of a monomer having a stimuli-responsive functional group with a crosslinker in a solution of a water-insoluble polymer in an organic solvent to yield an organogel comprising the water-insoluble polymer and a stimuli-responsive polymer; and

immersing the organogel in water or a water-containing liquid mixture to thereby yield a hydrogel.

Claim 14 (new): A polymer actuator comprising:

a stimuli-responsive polymer hydrogel capable of gelating as a result of absorbing and swelling with water and capable of changing its volume in response to a stimulus,

wherein the stimuli-responsive polymer hydrogel includes a water-insoluble polymer as a phase separation structure.